

In re Patent Application of:
AMMAR ET AL.
Serial No. Not Yet Assigned
Filed: Herewith

In the Claims:

1. (CURRENTLY AMENDED) A high frequency signal source comprising:

a dielectric resonator oscillator having an output signal;

a mixer that receives the output signal from the dielectric resonator oscillator; and

a phase locked loop circuit having a voltage controlled oscillator with a predetermined tuning range and operatively connected to said mixer ~~such that said mixer receives an output signal from the voltage controlled oscillator and sums the output frequencies from the dielectric resonator oscillator and voltage controlled oscillator for creating a summed output frequency~~, wherein a portion of the summed output frequency is fed as a coupled signal into the phase locked loop circuit that is phase locked to a reference signal to compensate for dielectric resonator oscillator frequency errors due to manufacturing and for any drift due to temperature changes or aging, wherein a higher output frequency accuracy with low phase noise is achieved without manual tuning and a portion of the tuning range of the voltage controlled oscillator compensates for any dielectric resonator oscillator initial frequency errors and drift over temperature and aging.

2. (ORIGINAL) A high frequency signal source according to Claim 1, and further comprising a crystal reference oscillator operatively connected to the phase locked loop circuit for providing a stable reference signal thereto.

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3. (ORIGINAL) A high frequency signal source according to Claim 1, and further comprising a filter operatively connected to the mixer for filtering the summed output frequency and eliminating unused side bands.

4. (ORIGINAL) A high frequency signal source according to Claim 1, wherein said filter further comprises a high side filter for filtering the upper side band of the summed output frequency and provides a final output signal, and a low side filter operatively connected to the phase locked loop circuit for filtering the lower side band of the summed output frequency to provide a coupled signal to the phase locked loop circuit.

5. (ORIGINAL) A high frequency signal source according to Claim 1, and further comprising an amplifier operatively connected to said mixer for amplifying the summed output frequency.

6. (ORIGINAL) A high frequency signal source according to Claim 1, and further comprising a divider circuit positioned within said phase locked loop circuit for dividing the coupled signal by a factor "N".

7. (ORIGINAL) A high frequency signal source according to Claim 1, and further comprising a phase locked loop chip having registers that are programmed for dividing the coupled signal and reference signal by a divide ratio between "M" and "N", respectively.

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8. (ORIGINAL) A high frequency signal source according to Claim 7, and further comprising a microcontroller operatively connected to said phase locked loop chip for programming the divide ratio between "M" and "N".

Claims 9-15 (CANCELLED)

16. (CURRENTLY AMENDED) A method of generating a high frequency signal comprising the steps of:

mixing an output signal generated from a dielectric resonator oscillator with an output signal from a voltage controlled oscillator and summing ~~having a predetermined tuning range and part of a phase locked loop circuit to sum~~ the frequencies for creating a summed output frequency; and

coupling a portion of the summed output frequency ~~as a coupled signal~~ into the phase locked loop circuit that is phase locked to a reference signal to compensate for dielectric resonator oscillator frequency errors due to manufacturing and for any drift due to temperature changes or aging, wherein a higher output frequency accuracy with lower phase noise is achieved without manual tuning and a portion of the tuning range of the voltage controlled oscillator compensates for any dielectric resonator oscillator initial frequency errors and drift over temperature and aging.

17. (ORIGINAL) A method according to Claim 16, and further comprising the step of filtering the summed output frequency before coupling to aid in eliminating unused side bands.

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18. (ORIGINAL) A method according to Claim 17, and further comprising the step of filtering the summed output frequency within a high side filter that filters the upper side band of the summed output frequency for providing a final output frequency and filtering the summed output frequency of the summed signal within a low side filter that filters the lower side band to provide a signal to the phased lock loop circuit.

19. (ORIGINAL) A method according to Claim 17, and further comprising the step of filtering within a bandpass filter.

20. (ORIGINAL) A method according to Claim 16, and further comprising the step of amplifying the signal before coupling.

21. (ORIGINAL) A method according to Claim 16, and further comprising the step of dividing the coupled signal by a factor "N".

22. (ORIGINAL) A method according to Claim 16, and further comprising the step of dividing the coupled signal within a divider circuit.

23. (ORIGINAL) A method according to Claim 16, and further comprising the step of dividing the coupled signal within registers contained within a phase locked loop circuit chip.

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Please add new Claims 24-32 as follows:

24. (NEW) A high frequency signal source comprising:
a free running dielectric resonator oscillator having an
output signal;

a mixer that receives the output signal from the
dielectric resonator oscillator; and

a phase locked loop circuit having a voltage controlled
oscillator and connected to said mixer for summing the output
frequencies, wherein said voltage controlled oscillator
frequency is tuned to maintain the sum constant.

25. (NEW) A high frequency signal source according to
Claim 24, wherein said phase locked loop circuit frequency is
tuned without manual tuning and operative without drifting
from an intended frequency.

26. (NEW) A high frequency signal source according to
Claim 24, wherein said voltage controlled oscillator has a
predetermined tuning range.

27. (NEW) A high frequency signal source according to
Claim 24, and further comprising a filter operatively
connected to said mixer and phase locked loop circuit for
filtering a lower sideband.

28. (NEW) A high frequency signal source according to
Claim 24, and further comprising a filter operatively
connected to said mixer for filtering an upper sideband and
providing a final output signal.

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29. (NEW) A high frequency signal source according to Claim 24, and further comprising a crystal reference oscillator operatively connected to said phase locked loop circuit for providing a stable reference signal.

30. (NEW) A high frequency signal source according to Claim 24, and further comprising a microcontroller operatively connected to said dielectric resonator oscillator and phase locked loop circuit for programming a divide ratio.

31. (NEW) A high frequency signal source according to Claim 30, and further comprising chip registers in which a divide ratio is programmed by said microcontroller.

32. (NEW) A high frequency signal source according to Claim 30, and further comprising a transistor operatively connected to said dielectric resonator oscillator, wherein said microcontroller is operative for optimizing the dielectric resonator output signal by adjusting bias on said transistor.